

rior tube for approximately four hours. The posterior tube was then opened. The immediate postoperative care did not differ from that of any lobectomized patient and will not be discussed in detail. In general, streptomycin was continued for at least two weeks and PAS for from one to four months postoperatively, the period depending upon visible remaining disease. In those cases in which there was or had been recent active disease, pneumoperitoneum usually was established within ten days of the lobectomy.

The follow-up care is of the utmost importance. No resection removes all of the tuberculous infection. Strict bed rest for a period of six months following operation is advisable as a rule, although in several cases, where the disease was apparently highly localized to the lobe removed, patients were allowed to commence carefully graded activities three months after operation.

IMMEDIATE RESULTS

One patient in the series died. That patient was considered to be only a fair operative risk. The upper lobe was completely excavated and the size of the cavity had not diminished after four months of Monaldi suction. There were clinical evidences of low-grade toxicity and the patient did not gain weight although cough was somewhat reduced following insertion of the catheter. As it happened, the death was preventable. Insufficient nursing coverage the night of operation resulted in rapid deterioration and shock from anoxia due to plugging of

the right stem bronchus and lower trachea. At autopsy, atelectasis on the operative side and extensive tuberculous pelvic peritonitis were noted.

Of the 16 surviving patients, eight were operated upon six months or more before the time of this report. Of these, four had had sputum negative for acid-fast bacilli on repeated concentrate and culture examinations for four months or longer and were on graded exercise. The remaining four have been discharged from the sanatorium.

Of the entire group of 26 patients with combined resection and thoracoplasty there was no wound infection, no empyema, and no spread or reactivation of tuberculosis. In three cases in which it was presumed that active tuberculosis was still present on the contralateral side, there has been steady regression of the lesions.

2938 McClure Street.

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Pleural Decortication in Tuberculosis

JOSEPH WEINBERG, M.D., *Long Beach*

SINCE the report on decortication in tuberculous empyema by Frazer Gurd in 1947, there has been a fair experience with application of the method by a number of clinics. Twenty operations of total pleural decortication in tuberculous pleuritis have been done at Birmingham Veterans Administration Hospital since the fall of 1947, and enough time has now elapsed to permit an appraisal of the procedure insofar as the indications for operation and the early results are concerned.

In the 20 cases in which the operation was done the etiologic background was: Induced pneumothorax, ten cases; spontaneous effusion, four cases; induced pneumothorax followed by spontaneous pneumothorax, one case; pneumothorax and pneumonolysis, five cases.

The indications for operation were: Unexpanded lung with clear fluid, eight cases; undrained frank

empyema, 11 cases; draining empyema, one case. In three of the cases of undrained empyema there were relatively small, almost silent abscesses with a greatly thickened fibroid surrounding membrane. The condition in these three cases was the result of spontaneous pleural effusion during the course of pulmonary tuberculosis, and the condition had existed for at least six months prior to admission to Birmingham Veterans Administration Hospital.

Reexpansion had been attempted in all of the cases at some period prior to operation. In each case there was ample evidence that the space could not be obliterated by medical means, or that if obliteration could be accomplished, it would be done at the expense of extreme shifting of the mediastinum, which had occurred in three cases. Surprisingly, an accumulation of tuberculous pus was found in each of these three cases.

One cause of concern which is frequently expressed is that the underlying lung may harbor cavities or other tuberculous lesions which are obscured by the empyemic sac, and that reexpansion

From the Surgical Service, Birmingham Veterans Administration Hospital, Van Nuys, California.

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of the lung following decortication will aggravate the pulmonary tuberculosis. This was not found to be the case in this series. The compression of the lung by the empyema or pleural thickening does not appear to benefit the underlying diseased lung. As one would expect, the removal of the empyemic sac benefits the patient by removing a source of toxic absorption which is usually more serious than the lesions within the parenchyma. This has been borne out by the uniform improvement in the general condition of patients following decortication. Furthermore, the lesions within the lung may be recognized at the time of and following decortication, and may be treated in a purposeful manner, including compression therapy when it is indicated. Four of the patients had thoracoplasty at the time of decortication or a few weeks later, in two instances to compress an underlying lesion, and in two to bring the thoracic wall to the lung because the lung did not expand completely.

All of the patients are alive, and the empyema or abnormal space has been obliterated in all of the patients, except one among those most recently operated upon. This patient, one of three operated upon within two months of the time of this report, had an accumulation of purulent fluid and it was considered that removal by drainage might be necessary. The latest three cases deserve special mention because they are the only cases, in the group of 20, in which operation was done without the adjunctive use of streptomycin. In all three cases fluid formed following operation. In one case—that of the patient with accumulation of fluid at the time of this report—the fluid at first was evacuated spontaneously through a previous surgical wound made for immediate aspiration following operation. In another case in this group of three, purulent exudate developed three weeks following operation. The surgical wound is now closed and there is no evidence of retained fluid. In the only other case in which fluid developed following operation, the organism was resistant to streptomycin at the time of operation. Complete obliteration of the space followed spontaneous evacuation of the fluid one month after

operation, and the patient has remained well since. Thus the three cases in which streptomycin was not used at the time of operation are the only ones in which complications of any serious significance developed.

In the author's experience, there have been few contraindications to decortication. In the case of unexpanded lung without suppuration, enough time and effort must be given to attempts to reexpand the lung by medical means before decortication is decided upon. However, once it is ascertained that the lung will not fill the pleural space without dangerous shifting of the mediastinal structures, decortication should be performed early, since the longer the abnormal space remains, the more difficult it will be to reexpand the lung.

One should hesitate to perform decortication in the presence of active disease of appreciable extent in the opposite lung. In the cases in this series in which there was controlled disease in the opposite lung, there was no evidence of spread following operation. In these several cases the organisms were sensitive to streptomycin. In one case, a cavity in the opposite lung was treated by thoracoplasty several weeks following decortication. The decortication was done first in order to permit reexpansion of the lung prior to compression of the opposite lung by thoracoplasty.

The author's experience with decortication has been very satisfactory. There was no operative or subsequent mortality and the space was obliterated in all cases. This is in contrast to the general experience with other methods of treatment, both surgical and non-surgical, in which the empyema patient undergoes numerous mutilating operations, often without success, or is treated by aspirations over periods of years.

The fact that 15 of the 20 patients have been followed for from one to two and one-half years and have no evidence of recurrence of the empyema or abnormal space or evidence of pulmonary spread is fairly good assurance that the disease for which the operation was performed will not recur.

Veterans Administration Hospital.

